Of no less practical moment is the advantage of establishing a differential diagnosis between cases of ruptured bladder, with discharge of urine into the peritoneal sac, from those rarer instances in which the organ gives way anteriorly, or where it is uncovered by serous membrane. In one case the irritation caused by a fluid loaded with effete salts, and prone to decomposition sooner or later, excites peritonitis. In the other, the effused urine produces destructive cellulitis, with gangrenous mischief and fever of a typhoid character. The diagnosis can generally be made with unerring decision. The manner in which the urine overflows the catheter without impetus or jet, and the fact of our being able to obtain it in *quantity*, by skilful catheterism, are conclusive proofs of its discharge not from the cavity of the bladder, yet of its being free or unconfined—and, therefore, that it comes from the peritoneal sac. If, on the other hand, having a clear history of the case before us—being certain, in fact, that the bladder had previously contained a quantity of urine —the catheter failed to discharge this fluid, or only gave exit to a *small quantity on its first introduction*, there are then good grounds for concluding that the urine was not free, but confined in the cells of the areolar tissue, and consequently unable to return into the bladder through the laceration—in short, that the rupture had taken place through the anterior portion of the viscus.

The treatment in Dr. T.'s case consisted in the introduction and retention of a full-sized gum-elastic catheter, for the purpose of draining off the urine. A few hours later, the stopcock of a half-pint elastic bag was adjusted to the catheter, which was then passed through the rent in the bladder, and tepid water to the amount of three bagfuls, injected through the instrument. Each portion when introduced was retained for a couple of minutes, and then allowed to return through the catheter, so that not more than eight ounces were injected at a time into the abdomidal cavity. At first the water returned of a reddish tinge, but the last half pint was clear and bloodless. Each bagful regurgitated in a slow and interrupted manner, and pressure had no influence in accelerating or otherwise altering the mode of its discharge. During these proceedings, which occupied about twenty minutes, the patient was caused frequently to change his position, so as to mix the injected fluid as much as possible with whatever urine remained in the peritoneal sac. As soon as the abdomen was emptied as far as practicable, the patient was again placed upon his back, with the pelvis well depressed, and the catheter withdrawn partially, that is to say, until its extremity only projected into the bladder; and when the urine commenced to drop away, the instrument was securely fixed with a jugum.

Dr. T. believes that although on the eighth day there may exist a tolerably perfect union of the lacerated surfaces, nevertheless, the bladder ought not to be permitted to empty itself by its own unaided efforts before the expiration of a fortnight. During the greater portion of the time the patient should be kept on his back with his shoulders well elevated.

With reference to general treatment Dr. T. recommends the warm hip-bath, relays of leeches for several days, opium in full doses, frequently repeated—calomel in small doses combined with it, until the mouth becomes affected—hot stupes and bran poultices over the abdomen.

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57. *Changes in the Nervous System which follow the Amputation of Limbs.* —Dr. W. H. Dickinson publishes (*Journ. Anat. and Phys.*, Nov. 1868) some investigations he has made relative to the changes which occur in the nervous system after amputation of the limbs. He expected to find that the portion of the encephalon which regulated the movements of each limb would be declared by a localized atrophy consequent on its removal. He failed, however, to discover any such lesion or any change of structure either in the cerebellum or great ganglia of the cerebrum. He next sought to trace evidence of change by commencing at the stump and working upwards. Three cases are related in which he made careful examinations of the subjects.

"Placing together," he says, "the several observations, it appears that when a limb has been absent, as the result of operation, for twenty or more years, the following changes have been found in the nervous system.

"First, atrophy of the nerves of the stump, of which a large proportion of the fibres have perished, notwithstanding that, supported by the fibrous tissue which enters into their structure, they retain their bulk and external appearance almost without alteration.

"Secondly, wasting of the nerve-roots, especially the posterior. The wasting of the tubes, in the absence of such fibrous investure as belongs to the mixed nerves, produces an attenuation, which in the case of the posterior root is very conspicuous.

"Thirdly, a slight loss of bulk in the gray matter of the cord, on the side of the lost member, near the origin of its nerves, without any intimate change discernible by the microscope.

"Lastly, a remarkable shrinking of the posterior column of the cord on the side of the mutilation, attended by a condensation of areolar tissue. The atrophy extends upwards, and in the case of the loss of an arm can be traced into the medulla oblongata as far as the upper limit of the decussation of the pyramids.

"The cerebrum and cerebellum remain unchanged.

"I am aware that many details relating to this subject remain to be worked out, and I should have waited for further opportunities had not my purpose been forestalled by M. Vulpian, who has, since these observations were made, published two similiar cases.

"His results differ very materially from mine. Both the cases he reports were of amputation of the leg, a little distance above the ankle. In one case the leg had been removed for 47 years, in the other for 20 years. In both cases M. Vulpian describes the spinal cord as slightly lessened in bulk on the side of the amputation. This diminution affected the gray matter generally, the white matter *with the exception of the posterior column.*

"The cells of gray matter were not altered in character, or appreciably in number. In one of the cases some spots of disintegration were supposed to exist in the gray horn. No changes were detected in the nerves or nerve-roots.

"My results differ from those of M. Vulpian in the atrophy of the nerves, posterior nerve-roots, and posterior columns of the cord, which were found in my cases but not in his. His cases and mine coincide in attributing a slight loss of bulk to the gray matter on the side of the mutilation.

"Dr. Waller long ago pointed out that nerves separated from their centres rapidly became atrophied. With regard to the spinal roots in particular he found that when an anterior root was cut the part retaining its connection with the cord remained unaltered, while the outer extremity wasted. After dividing a posterior root the reverse took place; the central end wasted, the peripheral end retained its structure. From these and other experiments, Dr. Waller was led to conclude that the outer portion of the severed posterior root owed its retention of structure to the ganglion to which it was attached, while the nutrition of the motor root depended on the cord.

"The facts brought forward in this paper appear to show that these conclusions need modification. It would seem that the posterior root may waste though still in connection with the ganglion, the anterior though still in connection with the cord. The ganglion therefore is not the sole controller of the nutrition of one root, or the cord of the other. It appears that long disuse of a nerve is sufficient to lead to its atrophy notwithstanding that those nervous structures which more immediately regulate its nutrition are complete.

"There are some points which as yet may be left without explanation, namely the greater atrophy of the sensory than of the motor roots, and the peculiar wasting of the posterior columns, passing vertically up the cord, and in the case of loss of the arm affecting the medulla, a course not corresponding with that of the sensory fibres, which soon lose themselves in the gray matter."

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58. *Recent Experience in Ovariotomy.*—T. SPENCER WELLS, Esq., states (*Lond. Med. Times and Gaz.*, Nov. 28, 1868) that since last October he has completed the operation of ovariotomy at the Samaritan Hospital, "in thirty-six cases, besides one case in which I performed the operation successfully for the second time on the same patient. Of the thirty-six women, thirty-one